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cease and determine. Nevertheless, the value of what little knowledge we now possess seems almost the groundwork of scientific agriculture. The micro-organisms which nitrify organic nitrogenous compounds, as well as those which act in the opposite direction, viz., in reducing nitrates to a lower form of oxidation, are of the utmost importance to agricultural chemistry. It is not beyond the range of possibility that a barren field may be rendered fertile by securing conditions favorable to nitrification and then seeding the soil with a few active nitrifying ferments.

Quite true it is, already, that any scheme for an analysis of a soil which leaves out of consideration the determination of nitrifying activity is far from complete. The action of bacteria on the ripening of cream and of cheese is a matter of but little less importance. The fermentation of cream and of cheese is already as much of an art as the fermentation of malt in the manufacture of beer. In the curing of tobacco the same activity is discovered and the day is not far distant when commerce in high bred tobacco bacteria will be an established fact. In short, we may look forward to the day when the bacteria active in agriculture will be carefully cultivated and the bacterial herd book will be found along with those of the Jersey cow and the Norman horse. Agricultural chemistry makes demands on every science which can aid it in the production of food and in the advancement of rational agriculture.

But we may go still a step further and follow the crude food into the factory and the kitchen. From the knowledge of the action of ferments mentioned above the great art of food preservation has been created. The sterilization of food products and their preservation from the further action of destructive ferments is one of the practical developments of rational agricultural chemistry. This method of food preservation is

infinitely preferable to that other simpler process which consists in adding to the food a substance which paralyzes the further action of micro-organisms. Happily, agricultural and analytical chemistry have provided a certain method of detecting chemicals thus used for food preservation.

The conversion of foods into appropriate digestive forms and the study of their nutritive power mark the final step in agricultural chemistry in its control of food products. In this relation it comes into intimate contact with hygiene and animal physiology, thus almost completing the circle of intimate union with nearly all the leading sciences. Intimately associated with this branch of the subject is the control of the purity of the food itself and the detection of the adulterations to which it may be subjected.

The thoughts suggested in the foregoing pages are those that have come to me amid a multitude of distractions as those suited, at least in part, to meet the views of your presiding officer in asking me to introduce the theme of agricultural chemistry for discussion before the Section. I now yield the floor for a more particular treatment of some of the branches of the subject.

H. W. WILEY.

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PROCEEDINGS OF THE BOTANICAL CLUB, A.  
A. A. S., SPRINGFIELD MEETING, AUGUST  
29th TO SEPTEMBER 2d, 1895.

THE meetings were held in the room assigned to Section 'G,' in the State Street Baptist Church.

THURSDAY MORNING, AUGUST 29.

In the absence of the President, Prof. D. H. Campbell, and of the Secretary, Prof. F. C. Newcombe, the meetings of the Club were placed in organization by Prof. Geo. F. Atkinson. Hon. David F. Day was made Chairman *pro tem.*, and Prof. H. L. Bolley, Secretary.

On motion of Professor Atkinson, those having papers to present were requested to hand titles of the same to the Secretary upon the day preceding that upon which it was wished the paper should be read.

The meeting adjourned at 11:30 to meet at 9 A. M., Friday, August 30th.

FRIDAY MORNING, AUGUST 30.

The Club met as ordered, with President D. H. Campbell in the chair. In order to facilitate the reading of papers, the titles of which for the first time in the history of the Club now appeared printed in the regular daily program of the A. A. A. S., the reading of the minutes of the previous meetings was dispensed with.

The first paper presented was on 'Crimson Clover Hairballs,' by Mr. F. V. Coville. These balls, composed of the hairs of the Crimson Clover, *Trifolium incarnatum*, has been found in the stomach of a horse. Mr. Coville exhibited specimens, also mounted slides showing their composition.

Professor Byron D. Halsted reported the results of field experiments with beans. He had found that 25 per cent. of plants grown on soil previously occupied by beans were affected by spot, whereas when grown on new soil only six per cent. were diseased.

Mrs. Elizabeth G. Britton reported corrections upon descriptions of *Coscinodon*.

Mr. O. F. Cook remarked upon 'A Peculiar Habit of a Liberian Species of *Polyporus*,' and exhibited specimens showing various degrees of proliferation, one pileus arising from another upon very extended delicate stalks, due perhaps, to the extreme moisture of their environment.

An apparatus for the bacteriological sampling of well water was described and illustrated by Professor H. L. Bolley, the merits of which were facilities afforded for sterilization in toto, and in general accuracy of work afforded without contamination by air and water.

Mr. C. L. Pollard described the methods of work in the National Herbarium. The colored labels in use to designate type specimens were made of special interest, because of the new range offered for convenience of reference.

Passing to order of unfinished business, Dr. Trelease called for the report of the committee appointed at the Rochester meeting to prepare and print a check list of the plants of northeastern North America. Dr. N. L. Britton, as chairman of the committee, submitted the appended report:

"The Committee reports that it has completed the task assigned it by the Club at its Rochester and Madison meetings, by preparing, to the best of its ability, a list of plants in accordance with instructions received at those meetings. The Committee herewith presents a printed copy for such list, which has been prepared and published without expense to the Club.

For the Committee,

N. L. BRITTON,  
*Chairman.*"

Mr. O. F. Cook, seconded by Dr. F. H. Knowlton, moved the acceptance of the report. After some discussion as to the scope of the term 'acceptance' as here moved, an adjournment was taken until afternoon without action being taken upon the motion.

FRIDAY AFTERNOON, AUGUST 30.

Following the regular session of Section 'G,' the Club, upon further discussion, adopted the motion of Mr. Cook to accept the report.

On motion of Prof. L. H. Bailey the Club then proceeded to the discussion opened in the morning by passing the regular program.

On motion of Mr. F. V. Coville, seconded by Prof. E. L. Greene, and carried, it was resolved that the meeting proceed to a discussion of the principles on which the list was based.

Dr. B. L. Robinson then alluded to certain generic names which he thought had been inconsistently employed in the list. He also discussed the admission of specific names first published as synonyms. The practice of admitting such names was defended by Prof. Greene, who maintained that the practice of 'taking up of synonyms' as used by the committee was a principle established by Gray.

Prof. N. L. Britton also maintained that the principles adopted by the Club at the Rochester meeting required the admission of such synonyms as those cited by Dr. Robinson.

After much rambling discussion, the following resolution, offered by Professor Britton, and seconded by Professor L. H. Bailey, was adopted:

*Resolved*, That in view of the opinions which have been expressed at home and abroad on principles of nomenclature, during the progress of the work of the committee, the matter be referred to the committee for consideration and report at the next meeting of the Club.

Prof. Britton also introduced the following resolution:

*Resolved*, That the committee be increased to eleven members by the additions of Dr. B. L. Robinson and Dr. C. S. Sargent.

At this point Dr. B. L. Robinson stated that, because of the radical difference of opinion existing between himself and the majority of the present committee upon certain vital points, it was plain to him that he must decline to serve upon the committee. In compliance with these wishes, the Club reluctantly accepted Dr. Robinson's withdrawal, and upon motion Professor L. H. Bailey's name was substituted in the resolution, and the same adopted as amended. The Club then adjourned to meet at the same place at 9 A. M., Monday, September 2d.

#### MONDAY MORNING, SEPTEMBER 2.

Prof. N. L. Britton, Dr. W. H. Seaman and Mr. Walter Deane were appointed a committee to nominate officers for the next meeting. The report of Treasurer F. C. Newcombe, showing the balance in hand, \$6.57, was read and accepted.

The first paper was read by Mrs. Elizabeth G. Britton, entitled 'Some Notes on *Dicranella heteromalla* and allied Species.'

Prof. J. C. Arthur described a new form of clinostat, and remarked on its advantages over similar machines previously constructed, its great superiority being multiple arms for holding plants, allowing of checks upon tests made.

A paper by Mr. A. B. Seymour describing the Mary A. Gilbreth collection illustrating the dissemination of seeds, now the property of Radcliffe College, was read by Mrs. Flora W. Patterson.

Judge David F. Day described the dissemination of the seeds of *Zinnia* by means of the persistent ray-flowers.

Mr. Walter Deane mentioned the expulsion of the seed from the capsules of the Witch-hazel, *Hamamelis Virginica*, stating that he had observed them strike a pane of glass fourteen feet away with almost force enough to crack it.

Judge Day spoke also on the desirability of further observations on climbing plants, referring to his observations on the genus *Dioscorea*, some species of which twine in one direction, others in another. He mentioned *Aconitum uncinatum* as a twining plant, and had observed 'a secondary peduncle in *Anemone Virginiana* twining around the primary one.

The following papers were read by title during the meetings:

'Notes upon Pig-nut Hickories,' by William Trelease.

'Experiments with Lime as a preventive of Club-root,' by B. D. Halsted.

'Notes on the alkaline Reaction of the

vascular Juices of Plants,' by Erwin F. Smith.

'Continuation of Experiments upon the Relation between the fertile and sterile Lerves of *Onoclea*,' by George F. Atkinson.

'A Hybrid between an Egg Plant and Tomato Plant,' by P. H. Rolfs.

'A Method of using Formalin Gelatine as a Mounting Medium,' by A. F. Woods.

The committee appointed to nominate officers submitted the following names and they were unanimously elected:

*President*, Frederick V. Coville, Washington, D. C.

*Vice-President*, Conway McMillan, Minneapolis, Minn.

*Secretary and Treasurer*, J. F. Cowell, Buffalo, N. Y.

The Secretary was requested to append to the minutes for future reference a list of persons who have been officers of the Club since its formation.

The Club then adjourned to meet as usual during the meeting of the Association in 1896.

Fifty-three botanists were registered during the different sessions.

H. L. BOLLEY,

*Secretary pro tem.*

#### THE BOTANICAL SOCIETY OF AMERICA.

THE first annual meeting of the Botanical Society of America was held in Springfield, Mass., August 27 and 28, 1895. The Council, having all members present, met in the afternoon of the 27th. The consideration of names proposed for membership, the canvassing of ballots cast for officers and transaction of other business engrossed the attention of the Council for an hour and a half.

The Society was then called to order by the President, Wm. Trelease, of St. Louis. The first day's session and a portion of those of the second day were devoted to business.

Four new members were elected: Mr. M.

S. Bebb, of Rockford, Ill.; Prof. W. R. Dudley, of Leland Stanford University; Prof. D. P. Penhallow, of McGill University, and Dr. W. A. Setchell, of Yale University.

The following officers were elected for 1896: President, Prof. C. E. Bessey, of the University of Nebraska; Vice-President, Prof. W. P. Wilson, of the University of Pennsylvania; Treasurer, Prof. Arthur Hollick, of Columbia College; Secretary, Prof. Charles R. Barnes, of the University of Wisconsin. Councillors, Dr. B. L. Robinson, of Harvard University, and Prof. G. F. Atkinson, of Cornell University.

Dr. A. W. Chapman, of Apalachicola, Fla., was elected unanimously an honorary member of the Society. Dr. Chapman, the well-known author of a 'Flora of the Southern United States,' is the first honorary member to be elected. His advanced age, precluding active membership, and his pioneer services in making known the vegetation of the Southern States, were felt to be sufficient warrant for this action.

Contributions of books having already been received by the Society, it was ordered that such be deposited in the library of the Missouri Botanical Garden, subject to the order of the Council, and the Secretary be directed to report to the Society the annual additions.

The Treasurer's report showed a cash balance of \$354.

The following resolution was presented by Prof. L. H. Bailey at a session subsequent to the reading of Dr. Britton's paper on 'The New York Botanical Garden,' and was unanimously adopted:

*Resolved*, That the Botanical Society of America express its thanks to Dr. N. L. Britton for his account of the condition and progress of the movement for a botanical garden in the city of New York, and congratulate the people of that city on the prospect of its rapid development; and, furthermore, that the Society commend the